

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A process for producing a corrosion- and wear-resistant layer on a substrate by spraying on an iron oxide-based material, characterised in that the iron oxide-based material which has at least 20% by weight of magnetite ( $\text{Fe}_3\text{O}_4$  and/or  $\text{Fe}_2\text{O}_4$ ) is applied by on-line controlled thermal spraying and in that the layer of the material is monitored by an on-line monitoring and control system, ~~to produce a homogeneous and thin layer of  $< 250 \mu\text{m}$  thickness~~ whereby properties of the material to be deposited are measured within the thermal spray.
2. (original) A process as set forth in claim 1 characterised by on-line monitoring and control by means of an ITG-camera (18) directed on to the spray jet (10), an LDA-detector (20) with LDA-laser (22) and an HSP-head (24) (Figure 1).
3. (previously amended) A process as set forth in claim 1 characterised by on-line monitoring and control by measurement of the particle speed in the spray flame.
4. (previously amended) A process as set forth in claim 1 characterised by on-line monitoring and control by means of measurement of the particle speed in the spray flame by a laser Doppler anemometer by means of a beam (60) which is emitted from

a laser device (62) and which is divided into two partial beams (60<sub>a</sub>, 60<sub>b</sub>) by an optical transmission system (64) (Figure 6).

5. (previously amended) A process as set forth in claim 1 characterised by on-line monitoring and control by measurement of the particle speed in the spray flame by means of a high-speed pyrometer.

6. (previously amended) A process as set forth in claim 1 characterised by on-line monitoring and control in which the particle temperature in the spray flame is measured by means of infra-red thermography (Figure 3).

7. (original) A process as set forth in claim 1 characterised by on-line monitoring and control in which the measured amount of gas is analysed.

8. (previously amended) A process as set forth in claim 1 characterised by on-line monitoring and control in which a measured amount of plasma gas is analysed.

9. (original) A process as set forth in claim 1 characterised by on-line monitoring and control in which a measured current-voltage characteristic is evaluated.

10. (previously amended) A process as set forth in claim 1 characterised by on-line monitoring and control in which an amount of powder , which is fed to a plasma spray, is measured.

11. (cancelled)

12. (previously amended) A process for producing a corrosion- and wear-resistant layer as set forth in claim 1 characterised in that an on-line controlled, water-stabilised plasma spray process is used as the coating process.

13. (cancelled)

14. (previously amended) A process as set forth in claim ~~13~~ 1 characterised in that the material comprises pure magnetite.

15. (previously amended) A process as set forth in claim 1 characterised in that the material comprises magnetite and at least one further metallic material.

16. (previously amended) A process as set forth in claim 1 characterised in that the material comprises magnetite and at least one intermetallic compound.

17. (previously amended) A process as set forth in claim 1 characterised by an addition of carbide or carbides or nitride or nitrides or silicide or silicides or boride or borides or oxide or oxides in the material.

18. (previously amended) A process as set forth in claim 1 characterised by the addition of a mixture of metals, intermetallic compounds, carbides, nitrides, silicides, borides and/or oxides in the material.

19. (previously amended) A process as set forth in claim 15 characterised by magnetite and an addition of up to 50% by weight of Cr, CrNi or a ferritic steel in the material.

20. (previously amended) A process as set forth in claim 1 characterised in that the material comprises magnetite and carbides of W, Cr, Mo, Nb, Ta, Ti or V.

21. (previously amended) A process as set forth in claim 20 characterised in that the material comprises magnetite with an addition of up to 30% by weight of tungsten and/or chromium carbides.

22. (cancelled)

23. (previously amended) A process as set forth in claim 1 characterised by a mixture of magnetite and chromium oxide in the material with a proportion of the chromium oxide of between 1 and 40%.

24. (previously amended) A process as set forth in claim 1 characterised by a grain size of said material to be sprayed of between 0.05 and 150  $\mu\text{m}$ .

25. (previously amended) A process as set forth in claim 1 characterised by a filling wire in the form of wire spray material whose filling comprises magnetite and whose sheath comprises an alloy.

26. (previously amended) A process as set forth in claim 1 characterised by a powder grain with good flow properties, which is produced from the powder material mixture by spray drying.

27. (previously amended) A process as set forth in claim 1 characterised by a powder grain which is resistant to separation of its mixture and which is produced from the powder material mixture by means of an agglomeration process.

28. (previously amended) A process for producing a corrosion- and wear-resistant layer on a substrate as set forth in claim 1 characterised in that said material to be sprayed has more than 30% by weight of magnetite ( $\text{Fe}_3\text{O}_4$  and/or  $\text{Fe}_2\text{O}_4$ ).

29. (previously amended) A process as set forth in claim 21 characterised by magnetite and an addition of up to 40% by weight of Cr, CrNi or a ferritic steel in the material.

30. (previously amended) A process as set forth in claim 20 characterised in that the material comprises magnetite with an addition of up to 20% by weight of tungsten and/or chromium carbides.

31. (previously amended) A process as set forth in claim 1 characterised by a proportion of the chromium oxide of between 5 and 30% by weight.

32. (previously amended) A process as set forth in claim 1 characterised by a grain size of said material to be sprayed of between 0.1 and 120  $\mu\text{m}$ .

33. (cancelled)

34. (currently amended) The process of claim 1 wherein said spraying by on-line controlled thermal spraying comprising a

mode of spraying selected from the group consisting of high-speed flame spraying, plasma spraying, high powered plasma spraying (HPPS), shroud plasma spraying (SPS), on-line controlled wire-flame spraying, ~~thermal spraying~~ and arc wire spraying.

35. (previously amended) The process of claim 1 wherein said spraying by on-line controlled thermal spraying comprises plasma spraying and said plasma spraying is performed in a mode selected from the group consisting of plasma spraying in air and plasma spraying in a vacuum.

Appln. No. 09/856,335  
Amdt. dated March 23, 2004  
Reply to Office action of December 23, 2003

### **Amendments to the Abstract**

Please insert the abstract as shown on the attached sheet  
following the remarks section of this paper.